WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 4, Issue 5, May, 2023

INVEST IN THE BUSINESS OF THE FUTURE: CLOUD COMPUTING

Abdullajonov Davronjon,
Kokan University, Teacher of the Department of Digital Technology and Mathematics, abdavron94@gmail.com, +998907857557.

Abdullajonova Gulmira,
Koqan University, 4th year Student of Economics, +998911217947,
qosimovagulmira99111@gmail.com

Annotation
Cloud computing is when companies rent their equipment over the Internet or immediately provide some kind of service. According to the calculations of the statistical analysis service, the market of cloud solutions will double in the next 4 years, and 3 times in 10 years.

Keywords: cloud technology, McKinsey consulting, First Trust Cloud Computing fund, Red Hat Linux operating system.

Introduction

Every day we perform hundreds of actions online: we search for information on the Internet, order a taxi through applications, connect to public Wi-Fi networks, listen to music - all this is provided by cloud technologies. In 2017, the revenues of this sector increased by 36.8% worldwide and amounted to 246.8 billion dollars. The article briefly covers the types of cloud technologies, their problems and how to invest in this business yourself.

Why do you need cloud technologies?

Have you noticed that after searching for certain information on the Internet, you come across similar ads? For example, if you type "how to open a brokerage account" into Google, new pages on the Internet will turn up ads about stock investing, IIA, and stock market education. This is because Google collects and stores information about its users for later use in its business - to sell to advertisers. And it's not just Google that's doing it.

In a survey conducted by the consulting company McKinsey, 69% of respondents said that their companies use the cloud, and 56% use cloud computing for data analysis. Small and medium-sized businesses also want to collect, store and analyze data about their customers. This allows you to offer personalized services, increase loyalty and ultimately increase sales.

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 4, Issue 5, May, 2023

With the development of the Internet, information is becoming more and more abundant. In 2017, according to Statista, Internet traffic reached 121.7 petabytes, and by 2021 it will increase by 128.5%. To give you a sense of scale, 1 petabyte is like 4,000 digital photos every day for your entire life. To store such large amounts of data, companies must maintain expensive data centers. This is not useful for many people it is cheaper to rent a part of someone else's data center.

Such large amounts of data are called big data or big data. Now this is the most profitable segment of the entire cloud technology market. According to Statista, in 2017, the revenue of the big data market grew by 23% to reach $33.5 billion.

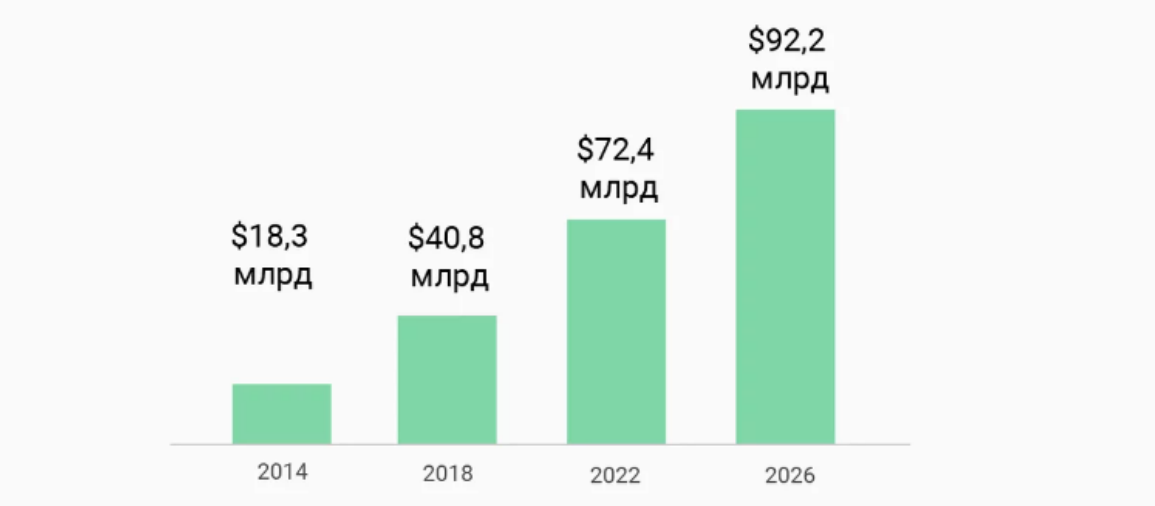

Figure 1. Big data market size from 2014 to 2026.

One of the main reasons for traffic growth is the Internet of Things. These are "smart" devices that are constantly connected to the Internet: home lighting, alarms, ventilation systems, household appliances, etc. According to UBS forecasts, by 2020 there will be 6.58 devices connected to the Internet per person. In 2015, there were 3.47 devices.

Big data storage and analysis is the largest, but only part of the cloud services market. Companies no longer need to create their own infrastructure: equip the office with servers, install office software on employees' personal computers, create a hacker protection system, etc. You can buy access to one of the cloud services so that it solves these problems over the Internet.

Cloud solutions: features, types and benefits

Cloud solutions are a distributed data processing technology in which computer resources and capabilities are provided to the user as an Internet service. If explained in an accessible language, it is a complete working platform on a remote server.

It is a resource that includes tools and applications such as data storage, servers, databases, networks, software. Cloud solutions are so called because the data used is located remotely in the virtual space of the "cloud". The user will be able to access all information through the Internet: connection from anywhere in the world where there is a network connection, convenient work.
Thanks to this, cloud solutions are already popular among companies, and every year they are more and more in demand. There are three areas of cloud computing: software as a service (SaaS), infrastructure as a service (IaaS), and platform as a service (PaaS).

Software as a Service (SaaS). This is software that does not need to be installed on your computer, it can be accessed over the Internet. The simplest example is email or Google Docs. Popular types of SaaS: document management systems, customer collaboration and communication organization services. Companies with a large market share: Salesforce, Microsoft, Adobe and SAP. Statista forecasts that SaaS revenue will grow 70% to $99.7 billion by 2020.

Infrastructure as a Service (IaaS). With this technology, you don't need to store information on your computer and hard drive - the information is in the cloud. The most famous example is Amazon's cloud servers. The company has set up huge data warehouses and sells space in them. By purchasing storage space, you download data and access it over the network.
Segment leaders: Amazon, Microsoft and IBM. According to Statista's forecasts, the revenue of the IaaS segment will grow by 108% to 72.4 billion dollars by 2020. This segment of cloud technologies is developing faster than others.

Platform as a Service (PaaS). The technology allows you to create your own programs without installing hardware and special software. All these are provided by companies through the cloud. You have to pay for used resources - rented equipment needed to process data and store it. For example, Microsoft Azure. With its help, you can create applications based on Windows and Linux operating systems, the Azure platform processes and stores data. It is a cloud platform for creating your own software or processing data.
Large market shares in the PaaS segment from Salesforce, Amazon and Microsoft. According to Statista's forecasts, by 2020, the revenue of the route will grow by 67.23% and amount to 14.8 billion dollars.

According to a report by the Gartner consulting company, global cloud computing revenue will grow by 13.38% annually until 2020.

Features of cloud solutions

Saving the budget

Cost-Effective These service providers use a pay-as-you-go model, so cloud service companies never pay more than they budgeted for.

Especially startups and small businesses with limited budgets for infrastructure are feeling the benefits. You don't have to worry about investing in upfront infrastructure costs like servers and software licenses.

Lack of territorial connection

For users, cloud services mean that they can access everything from personal files to any application and more from any device connected to the Internet. Whether they're working from an office computer, home laptop, or mobile device on the go, they can access their accounts and all of their information.

Analysis and Results

Challenges of cloud technologies

1. Regulation of data sovereignty

An oft-cited barrier to cloud adoption is data sovereignty regulations. Companies and government agencies in Qatar are concerned about what data they are legally allowed to transfer to the cloud. Although there are industry and government regulations, there is no general law requiring data retention in Qatar, and such restrictions are far less than many believe. To address these concerns, the TK (Ministry of Transport and Communications) published a consultation document in January 2021 on various current government rules and regulations for data transfers outside of Qatar.

While each industry and government agency has its own unique requirements, it is better to seek legal advice and address these issues than to do nothing and miss out on the many benefits offered by the cloud. is often easier. Of course, given that Microsoft and Google are building data centers in Qatar, this won't be much of a problem in the coming years.

2. Security

66% of IT professionals consider security a top concern when adopting the cloud. We found that the biggest concern was a sense of reduced security. The truth is that public cloud service providers spend more on security than any company or government agency. Moving to the cloud doesn't reduce security, it improves it.

For example, Microsoft invests $1 billion annually in the cybersecurity of its Azure cloud platform, which successfully counters 7 trillion cyber threats per day. Amazon and Google are making similar investments, all to keep personal and corporate data safe. Overcoming this challenge is not about a cultural shift, but a new security infrastructure. You need to ask yourself, "How can my company or government department adopt the cloud?"

In our experience, the best way to do this is to start small: migrate some workloads to the cloud and see if you're satisfied with the results. Third-party audit reports can often help you verify how your cloud service provider handles your data. As you gain confidence in doing the right thing, gradually move more and more of your workloads from a hybrid cloud model, where your data is stored in both the public cloud and your private data center, to a full-scale public cloud.

This approach is used by many governments who prefer to keep critical defense information in their own data centers and move other services to the public cloud.

3. Blocking Sellers

Vendor lock-in remains a major problem for many companies. The concern is that after moving all systems to the cloud, the company will be tied to the same vendor, even if the prices go up. This is especially important given the steady decline in the cost of cloud services around the world. Amazon founder Jeff Bezos famously coined the "Bezos Law," predicting that the price of cloud computing would halve every 18 months. As you can see from the graph below, we have confirmed that this is indeed the case.

With such constant price cuts, the last thing a company wants is to tie up with a non-competing supplier. There are several steps organizations can take to prevent this. The most popular of them is the implementation of a multi-cloud solution. By spreading your systems across multiple cloud platforms, it's more profitable to switch from one service provider to another if better opportunities arise. Establishing a cloud architecture for maximum portability and interoperability is critical to achieving this goal.

It is recommended to use containerized microservices architectural models. This allows development and deployment to be separated, enabling seamless integration and delivery, while using containers provides interoperability.

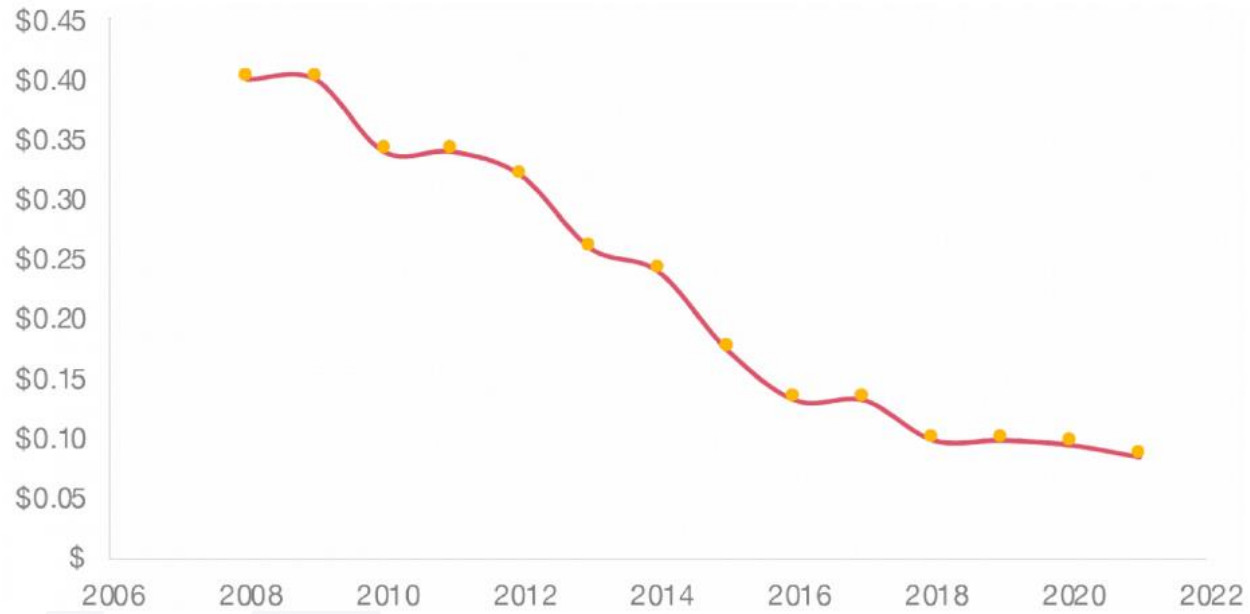

Figure 2. The cost of 1 hour of using cloud computing resources

Lack of qualification

One of the most urgent problems preventing the introduction of cloud technologies is the lack of qualified personnel. How can a company move to the cloud if it doesn't have the capabilities it needs?

In the PwC CEO Survey 2020, 77% of CEOs are concerned about the availability of key skills. The survey also found that organizations that focus on upskilling their employees outperform their peers in many ways and are more confident about their future.

A proven way to improve employee cloud skills is to create a center of excellence within your company. Encouraging those at the forefront of cloud adoption to become the core of this hub and encourage other staff to retrain. Assessing current and future business needs, changing organizational culture, and identifying key skills gaps are essential to overcoming the first hurdles to cloud adoption.

How to invest.

Buy many companies through the fund. There is one fund in the US that specializes in cloud computing, the First Trust Cloud Computing ETF. The fund has been operating since July 2011, and by March 2018 it had grown by 152 percent. The funds of the fund are distributed in shares of 30 companies. Among them, the top 10 are: Alphabet, Amazon, Cisco, Netflix, Akamai Technologies, Red Hat, Salesforce, NetApp, Teradata, Open Text. Management fee - 0.6% of client assets per year.

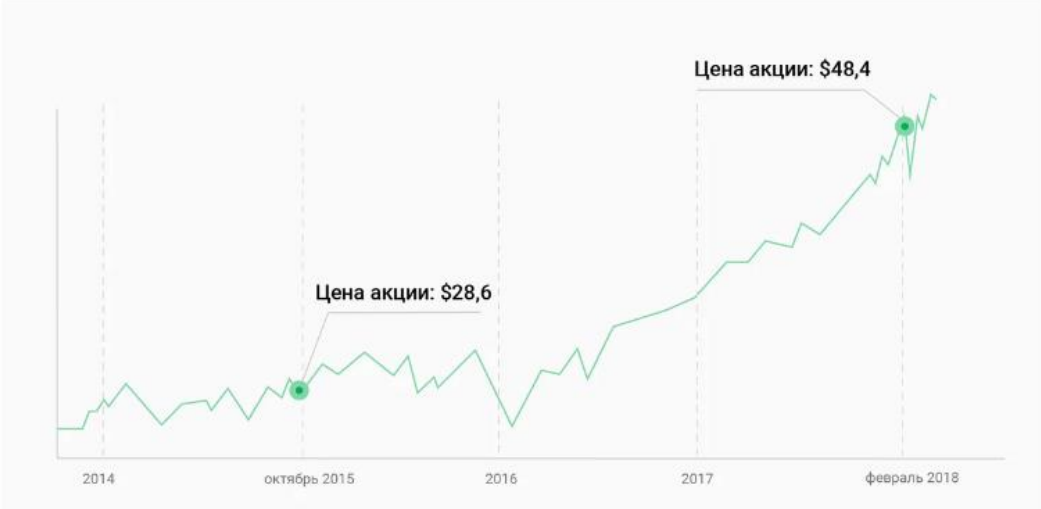

Figure 3. Share price of First Trust Cloud Computing fund

It is more difficult to choose individual shares independently, so investments in the fund are suitable for beginners. In this way, you reduce the risks, but the expected return may also decrease.

Buy the shares yourself. When you buy Amazon, Microsoft, Google, or IBM stock, you're investing very little in the cloud sector. Because for such large companies, this is not the main part of the business.

Summary.

I have highlighted small companies in each direction. They don't have the largest market shares, but these are businesses whose main revenue comes from cloud technologies.

NetApp - develops storage and data management systems, is one of the top five in this market. The company's shares can be bought on the NASDAQ and St. Petersburg stock exchanges, and they have grown by 55% over the past year. Tableau Software - develops software for corporate data analysis. Creates graphs and charts based on

uploaded data. Among the clients: Apple, Microsoft, Sberbank and Yota. The company's stock is traded on the NYSE and is up 76% over the past year.

Nutanix develops software that integrates enterprise and private cloud storage. Clients include AT&T and Gazprom. The company's stock is traded on the NASDAQ and is up 141% over the past year. VMware - mainly develops software for companies. With its products, you can connect all the company's data to one network and access them from any working computer. In Russia it is used by M.Video. The company's stock is traded on the NYSE and has risen 40% over the past year.

Red Hat develops software based on the Linux operating system. The company's most popular product is Red Hat Enterprise Linux. This is an enterprise OS, on the basis of which you can create your own programs by combining databases, data servers and CRM systems. Clients include: IBM, HP, Dell. The company's shares are traded on the NYSE and St. Petersburg stock exchanges, and over the past year they have grown by 88%.

References

1. Romanova I. Oblachniye tekhnologii i ix primeneniye // Molodoy ucheniy. — 2016. — No. 17.1. — S. 109–112.
2. Sklater N. Oblachniye vichisleniya v obrazovanii: Analyt. zapiska, September, 2010. M.: Institute UNESCO po information technology and education, 2010.
3. Gavrilenkova, I. V. Information technology and educational technology education and training. Practice, problem and perspective professional orientation. Monograph / I. V. Gavrilenkova. — M.: KnoRus, 2018. — 284 c.
4. Zakharova, I. G. Information technology and education: Uchebnik / I. G. Zakharova. — M.: Academy, 2013. — 192 c.
5. Trainev. V. A. New information communication technology and education: Information society. Informational and educational environment. Electronic pedagogy. Oblachno-modulnoye postroyeniye informatsionnix tekhnologii / V. A. Traynev. — M.: Dashkov i K, 2013-320 p
6. Fedotova, Ye. L. Information technology and science and education: Uchebnoye posobiye / Ye. L. Fedotova, A. A. Fedotov. — M.: Forum, 2018. — 256 c. https://moluch.ru/archive/62/9448/ — Primeneniye oblachnikh tekhnologiy v obrazovanii.
7. Djurayev, M. K. Effectiveness of using cloud technologies in education / M. K. Djurayev. — Text: neposredstvenniy // Molodoy ucheniy. — 2022. — No. 6 (401). — P. 286- 289. — URL: https://moluch.ru/archive/401/88493/ (data obrashchyeniya: 10.05.2022).